

**THE CLAIMS**

The following listing of claims replaces all prior versions and listings of claims in the above-referenced application:

1           1.       (Original)     A device, comprising:  
2           a growth surface;  
3           a growth mask on the growth surface, the growth mask defining an elongate  
4 growth window;  
5           an optical waveguide core mesa located in the growth window and having a  
6 trapezoidal cross-sectional shape; and  
7           a cladding layer covering the optical waveguide core mesa and extending over  
8 at least part of the growth mask.

1           2.       (Original)     The device of claim 1, in which:  
2           the growth surface has a [100] crystalline orientation; and  
3           the optical waveguide core mesa comprises sidewalls having a [111]  
4 crystalline orientation.

1           3.       (Original)     The device of claim 2, in which the growth mask  
2 comprises opposed edges aligned parallel to the [011] crystalline direction of the  
3 growth surface.

1           4.       (Original)     The device of claim 1, in which the optical waveguide  
2 core mesa is homogeneous in structure and has a greater refractive index than the  
3 cladding layer.

1           5.       (Original)     The device of claim 1, in which: the device is an  
2 optoelectronic device; and the optical waveguide core mesa comprises a quantum well  
3 structure.

1           6.     (Original)     The device of claim 5, in which the quantum well  
2     structure comprises quantum well layers comprising aluminum, gallium, indium and  
3     arsenic.

1           7.     (Original)     The device of claim 5, in which the quantum well  
2     structure comprises quantum well layers comprising gallium, indium, arsenic and  
3     phosphorus.

1           8.     (Original)     The device of claim 5, in which the optical waveguide  
2     core additionally comprises a separate confinement heterostructure in which the  
3     quantum well structure is located.

1           9.     (Original)     The device of claim 5, in which the optical waveguide  
2     core mesa comprises materials having a greater refractive index than the cladding  
3     layer.

1           10.    (Original)     The device of claim 1, in which: the cladding layer is a  
2     first cladding layer; the device additionally comprises a second cladding layer; and the  
3     growth surface is a surface of the second cladding layer.

1           11.    (Original)     The device of claim 1, in which the growth mask and  
2     the optical waveguide core mesa are similar in thickness.

1           12.    (Original)     A device fabrication method, comprising: providing a  
2     growth chamber; providing a wafer comprising a growth surface; and in the growth  
3     chamber, performing a fabrication process, comprising: growing an optical waveguide  
4     core mesa on the growth surface by micro-selective area growth, and without  
5     removing the wafer from the growth chamber after the fabricating, covering the  
6     optical waveguide core mesa with cladding material.

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1           13.   (Original)   The method of claim 12, in which the growing  
2 comprises: forming a growth mask on the growth surface, the growth mask defining  
3 an elongate growth window; and growing the optical waveguide core mesa in the  
4 growth window by the micro-selective area growth.

1           14.   (Original)   The method of claim 13, in which: the growth surface  
2 has a [100] crystalline orientation; and the forming comprises aligning opposed edges  
3 of the growth mask parallel to the [011] crystalline direction of the growth surface.

1           15.   (Original)   The method of claim 13, in which the fabrication  
2 process lacks an etching process performed after completion of the forming and before  
3 completion of the covering.

1           16.   (Original)   The method of claim 12, in which: the optical  
2 waveguide core mesa comprises sloped sidewalls and a top surface extending between  
3 the sidewalls; the growing comprises growing the optical waveguide core mesa at a  
4 growth temperature above that at which adatoms migrate from the sidewalls to the top  
5 surface of the optical waveguide; and the covering comprises growing the cladding  
6 material at a growth temperature below that at which adatoms migrate off the side  
7 walls of the optical waveguide core mesa.

1           17.   (Original)   The method of claim 16, in which the covering  
2 comprises growing the cladding material laterally over part of the growth mask.

1           18.   (Original)   The method of claim 12, in which the covering  
2 comprises growing the cladding material under growth conditions in which the  
3 cladding material grows on the sidewalls of the optical waveguide core mesa in  
4 addition to the top surface thereof.

1           19.   (Original)   A device fabrication method, comprising: providing a  
2   wafer comprising a growth surface; at a first growth temperature, growing an optical  
3   waveguide core mesa on the growth surface by micro-selective area growth, and at a  
4   second growth temperature, lower than the first growth temperature, covering the  
5   optical waveguide core mesa with cladding material.

1           20.   (Original)   The method of claim 19, in which: the optical  
2   waveguide core mesa comprises sidewalls having a width; the first growth  
3   temperature is at a temperature at which adatoms have a surface diffusion length  
4   greater than the width of the sidewalls; and the second growth temperature is at a  
5   temperature at which the adatoms have a surface diffusion length less than the width  
6   of the sidewalls.

1           21.   (Original)   The method of claim 19, additionally comprising  
2   growing a sublayer of the cladding material on the optical waveguide core mesa by  
3   micro-selective area growth.

1           22.   (Original)   The method of claim 21, in which growing the sublayer  
2   of the cladding material comprises setting the growth temperature to a temperature  
3   intermediate between the first growth temperature and the second growth temperature.